VI. TB Drugs

A. NC TB Program

1. Supplies drugs, including PPD, only to health departments.

2. Contracts with a vendor to ship drugs within 24 hours of the drug order. (Note: Counties that have contracts with Cardinal for weekly drug deliveries will only receive drug orders on Wednesday).

3. Does **not** provide medications for the treatment of non tuberculosis mycobacterium (NTM).

4. Allows rifampin use for contacts to *Hemophilus influenza* and meningococcal disease. Communicable Disease (919) 733-3419 must be consulted if more than two bottles are needed to treat all the contacts.

B. Health Department Pharmacy

1. Maintains contract with the state vendor so TB drugs can be shipped directly to the county.

2. Dispenses medications in compliance with applicable laws and health department policy.

3. Labels medications for dispensing on an as needed basis. The N.C. TB Control Branch cannot return pre-labeled drugs to the pharmaceutical company for credit.

4. Prepares suspension/liquid forms of rifampin, PZA or other drugs.

5. Does not provide medications for the treatment of non-tuberculosis mycobacterium (NTM).

6. Does not provide PPD to other health care providers or other agencies.

7. Maintains a log with patient name, lot number, manufacturer, and expiration date.

8. Follows the Public Health Pharmacy Rule § G.S. 90-85.34A. (Refer to Chapter XI).

C. Drug Information

1. Purified Protein Derivative (PPD)
   - Must be refrigerated during shipping.
   - Should be stored in refrigerator between 35°-46° F.
   - Should never be frozen.
   - Discard 30 days after opening, or if solution becomes cloudy.
   - Protected from light.
   - If you have questions about PPD stability you should call Sonofi-Aventis (Tubersol) at 1-800-822-2463. They will need to know if the vial has been opened, the temperature of the room, the length of time at this temperature,

and, if this was a shipment, length of transit since removal from refrigeration.

- Health departments are not permitted to supply PPD to any other provider.
- State-provided PPD may only be used on those persons who are considered high-risk for developing TB. See Chapter II for clarification about who is at high-risk.
- Locally purchased PPD should be used for low risk tuberculin skin testing.

2. See Tuberculosis Biologicals Requisition and Inventory (DHHS 3093) on the next page for available medications.

D. Ordering Drugs

1. Complete Tuberculosis Biologicals Requisition and Inventory form (DHHS 3093) which can be found at: https://epi.publichealth.nc.gov/cd/tb/docs/dhhs_3093.pdf

2. Fax orders to Eric Davis at (919) 733-2054.

3. Contracts with a vendor to ship drugs within 24 hours of the drug order. (Note: Counties that have contracts with Cardinal for weekly drug deliveries will only receive drug orders on Wednesday).

4. Orders shipped from Cardinal Health are delivered by commercial carrier and require a signature upon receipt.

5. The Cardinal invoices shipped with the TB biologicals are to be documented as "received" and initialed by an agency representative. Any missing TB biologicals are to be noted on the invoice. Then call the Field Development Unit at (919) 755-3151 to report the missing TB biologicals.

6. The original Cardinal invoice is required for payment. It should be signed and mailed within three business days to Eric Davis. Invoices can also be scanned and emailed to eric.a.davis@dhhs.nc.gov :

   DHHS/Division of Public Health
   Epidemiology Section, Communicable Disease Branch
   Field Development Unit
   1933 Mail Service Center
   Raleigh, NC 27699-1933
   Att: Eric Davis

7. All expired drug disposal is the responsibility of the local health department in accordance with state and local drug disposal guidelines.

8. All local health departments must have a separate 340b HRSA account for TB drugs and must re-certify this account annually.

9. If you have questions about TB drugs and cannot reach Eric Davis please contact Ron Higginbotham at 919-919-755-3139 and if he is unavailable contact Pete Moore at 919-755-3140.

10. All drugs except Tubersol, Sodium Chloride, Streptomycin, INH, RIF, Rifapentine (RPT), PZA, and EMB must have approval from a TB Nurse Consultant or Medical Director before it can be shipped.

E. Common Drug Interactions with Tuberculosis Medications [1]

Tuberculosis Medication	Drug or Drug Type	Interaction
Isoniazid (INH)	Acetaminophen	Increased toxic metabolites
	Antacids	Decreased INH absorption
	Anticoagulants (oral)	Increased anticoagulant effect
	Benzodiazepines	Increased benzodiazepines toxicity
	Carbamazepines	Increased toxicity of both drugs
	Cycloserine	Increased CNS effect of cycloserine
	Disulfiram	Severe psychotic episodes
	Enflurane	Increased nephrotoxicity
	Haloperidol	Increased haloperidol toxicity
	Ketoconazole	Decreased ketoconazole effect
	Phenytoin	Increased phenytoin toxicity
	Theophyllin	Increased theophyllin toxicity
	Valproate	Increased hepatic and CNS toxicity
Rifampin (RIF) Rifabutin Rifapentine	Aminosalicylic acid	Decreased RIF absorption
	Anticoagulants (oral)	Decreased anticoagulant effect
	Antidepressants	Decreased anticoagulant effect Tricyclic, barbiturates, benzodiazepines
	Beta-adrenetgic blockers	Decreased beta blockade
	Metoprolol	Possible increased beta blockade
	Chloramphenicol	Decreased chloramphenicol effect
	Clofibrate	Decreased clofibrate effect
	Contraceptives	Decreased contraceptive effect
	Corticosteroids	Marked decreased corticosteroid effect
	Cyclosporine	Decreased cyclosporine effect
	Dapsone	Possible decreased dapsone effect
	Delavirdine	Marked decreased delavirdine effect
	Digitoxin	Decreased digitoxin effect
	Digoxin	Decreased digoxin effect
	Diltiazem	Decreased diltiazem effect
	Disopyramide	Decreased disopyramide effect
	Fluconazole	Decreased fluconazole effect
	Haloperidol	Decreased haloperidol effect
	Itraconazole	Decreased itraconazole effect
	Mephenytoin	Decreased mephentyoin effect
	Mexiletin	Decreased antiarrhythmic effect
	Methadone	Decreased methadone effect
	Nefedipine	Decreased antihypertensive effect
	Nesoldepine	Decreased antihypertensive effect
	Phenytoin	Decreased phenytoin effect
	Progestine	Decreased progestine effect

Tuberculosis Medication	Drug or Drug type	Interaction
Continued:	Propaferrone	Decreased propaferrone effect
Rifampin	Protease inhibitors (PI)	Marked increase serum levels of Rifabutin
Rifapentine		RIF and marked decreased serum levels in PI
	Quinidine	Decreased quinidine effect
	Sulfonylurea	Decreased sulfonylurea effect
	Tetracyclines	Decreased tetracycline effect
	Theophyllines	Decreased theophylline effect
	Tocainide	Possible increased tocainide effect
	Trimethrprim-sulfamethoxazole	Possible rifampin toxicity
	Verapamil	Decreased verapamil effect
Aminoglycoside	Amphotericin	Nephrotoxicity (synergism)
	Bumetanide	Increased ototoxiciy
	Capreomycin	Increased ototoxicity and nephrotoxicity
	Cephalosporins	Increased nephrotoxiciy
	Cisplatin	Increased nephrotoxicity
	Cyclosporines	Increased nephrotoxicity
	Enflurane	Possible increased nephrotoxicity
	Ethacrynic acid	Increased ototoxicity
	Furosemide	Increased ototoxicity and nephrotoxicity
	Gallium	Increased nephrotoxicity
	Methotrexate	Possible increased methotreate toxicity with kanamycin
	Neuromuscular blocker	Increased neuromuscular blockade
	Vancomycin	Increased ototoxicity and nephrotoxicity
Pyrazinamide	Allopurinol	Failure of allopurinol to decrease serum uric acid level
Pyridoxine	Barbiturates	Decreased Barbiturate effect
	Levodopa	Decreased levodopa effect
	Phenytoin	Decreased phenytoin effect
Cycloserine	Alcohol	Increased alcohol effect & seizures
	Isoniazid	Increased CNS effect of cycloserine
	Ethionamide	Increased CNS effect of cycloserine
Quinolones	Antacid with metal cations (Ca, Mg, Al, Fe)	Reduced absorption of quinolones
	Sucralfate	Reduced absorption of quinolones
	Probenecid	Increased serum level of quinolone

Tuberculosis Medication	Drug or Drug type	Interaction
Quinolones continued	NSAIDS	Increased CNS stimulation and possible convulsions
	Drugs metabolized By cytochrome P450 (cyclosporine, theophyllin, warfarin, phenytoin, sulfonylurea	Increased action of additional drug
Para-aminosalicylic Acid (PAS)	Digoxin	Possible decreased digoxin action
Cycloserine	Isoniazid	Increased CNS effect
	Ethionamide	Increased CNS effect of cycloserine
Ethionamide	Cycloserine	Increased CNS effect of cycloserine

[1] Clinical Policies and Protocols, Bureau of Tuberculosis Control, New York City Department of Health. Appendix F, pg.109

For in-depth information about TB drugs please refer to Centers for Disease Control and Prevention. Treatment of Tuberculosis, American Thoracic Society, CDC, and Infectious Diseases Society of America. MMWR 2003;52 (NO. RR-11):19-32

There is also a publication for clinicians treating tuberculosis in patients taking certain antiretroviral drugs for HIV infection called “Managing Drug Interactions in the Treatment of HIV-Related Tuberculosis “. The site can be accessed at:
https://www.cdc.gov/tb/publications/guidelines/tb_hiv_drugs/default.htm

F. TB Drug Abbreviations

Drug	Abbreviation
Isoniazid	INH
Rifampin	RIF
Rifabutin	RBT
Rifapentine	RPT
Pyrazinamide	PZA
Ethambutol	EMB
Streptomycin	SM
Cycloserine	CIS
Kanamycin	KM
Ethionamide	THA
Capreomycin	CAP
Ciprofloxin	CIP
Amikacin	AK
Para-aminosalicylic acid	PAS